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Effect of aerobic training and core strength training on physical fitness variables of cricket players

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Abstract

The purpose of the study was to find out the effect of aerobic training and core strength training on physical fitness variables. To achieve these purpose thirty cricket players were selected from N.A. Matriculation Hr Sec School, naively. The subjects age range from 15 to 18 years. They were divided into three group's experimental group I (Aerobic Training), experimental group II (core strength training), experimental group III was control group. The Training period was six weeks and three days per week. The control group was kept separate, No treatment was given to the group. The physical fitness variables Arm power and Muscular endurance were tested. The pre test and post test was taken before and after the treatment respectively. The ANACOVA was used to find out the significant difference between the groups. If the result was significant Scheffe's post hoc test was used to find out the parried mean differences. The 0.05 level of confidence was fixed to find out the significant level. It was concluded that aerobic training and core strength training improve the physical fitness variables.

Keywords: Fitness, arm power, muscular endurance, aerobic training, core strength training

1. Introduction

1.1. Physical Education

Physical education is an education and through human movement where many of educational objectives are achieved by means of big muscle activities involving sports, game, gymnastics, dance and exercise. Today, physical education is a required part of most school curricula and a number of colleges and universities offer degrees in the field. Physical education classes generally include formal exercises, sports and contests; although an increasing emphasis has been given to such Asian techniques as yoga, karate and judo. The American Alliance for Health Physical Education and Dance (AAPERD) formed 1885 is concerned with improving its fields of education and with increasing the public's knowledge and appreciation of physical. (William H. Freeman, 1982)^[1].

1.2. Aerobic Exercise

Aerobic exercise is a physical exercise of relatively low intensity that depends mainly on the aerobic energy generating producer. Aerobic factually wealth. "Living in air, and refers to the use of oxygen to sufficiently convince power stress through via aerobic metabolism. Generally, light to moderate intensity activates that are adequately supported by aerobic metabolism can be performing for comprehensive periods of time. Aerobic exercise (Cooper, Kenneth e) moderate intensity workout that uses up oxygen at a rate in which the cardio respiratory system can replenish oxygen in the working muscles. Examples of such activity are exercises like stationary bike riding or walking. It is a good activity for fat loss when done in the right amounts by highly catabolic if done in excess. (org/wick/aerobic exercise.) (Machael kent, 1997.)^[2].

1.3. Core Strength Training

The core region consists of far more than just the abdominal muscles. In fact core strength training aims to target all the muscle group that are critical for the transfer of energy from large to small body parts during many sporting activities. There isn't really a technical definition for core strength training, but I considered it to be program that includes

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components of balance, stability, abdominal, lower back work and all the muscles of the trunk. A true core strength training programme not only uses your abs but also activates all the muscles stabilizing the spine, hips and pelvis.1. (Marguerite Ogle, 2011) [3].

1.4. Benefits of Core Strength Training

Better posture. More control Improved, more powerful performance, Injury prevention and rehabilitation, increased protection and “bracing” for your back, a more stable center of gravity, a more stable platform for sports movements.

3.5. Physical Fitness Variables

Physical fitness means to share responsibility without undue stress, fatigue and help in the quality of health and wellbeing. Apart from that player should be sound in technique at the time of play no player speed and movement of the ball and change their technique and fundamental skill in order to execute the movement successfully and it also for the defensive arts skill. Physical fitness is used in two close meanings –general fitness (a state of health and well-being) and specific fitness (a task –oriented definition based on the ability to perform specific aspects of sports or occupations). (Deason, 1991) [4].

1.6. Arm Power

Arm power in other words, the ability to gather maximum strength in a very short period of time. In fact, the gap between maximum powers (developed in milliseconds) and maximum strength (a second or more) is the explosive differential gap as outlined in this article.

1.7. Muscular Endurance

Muscular Endurance is the ability of a muscle or muscle group to do repeated contractions against a less-than-maximum resistance for a given period of time. This is in contrast to muscular endurance, which is the greatest amount of force that a muscle or muscle group can exert in a single effort. (Mathews, 1981) [5].

2. Materials and Methods

The purpose of the study was to find out the effect of aerobic training and core strength training on physical fitness variables of cricket players. To achieve these purpose thirty cricket players were selected from N.A.Matriculation Hr Sec School, naively. The subjects age range from 15to 18 years. They were divided into three group’s experimental group I (Aerobic Training), experimental group II (core strength training), experimental group III was control group. The Training period was six weeks and three days per week. The control group was kept separate, No treatment was given to the group. The physical fitness variables Arm power and Muscular endurance were tested. The test push-ups were used to find out the Arm power, test sit-ups was used to find out the muscular endurance. The pre test and post test was taken before and after the treatment respectively. The ANACOVA was used to find out the significant difference between the groups

3. Result and Discussion

Analysis of covariance for the pre, post and adjusted post test mean values for aerobic training group, core strength training group on arm power (in counts)

Table 1: Analysis of covariance for the pre, post and adjusted post test mean values for aerobic training group, core strength training group on arm power (in counts)

Test	aerobic training group	core strength training group	Control group	Sources of variance	Sum of squares	df	Mean square	“F” ratio	Table value
Pre test mean	25.50	23.90	27.00	Between within	48.07 571.40	2 27	24.03 21.16	1.14	3.35
Post test mean	30.10	31.10	25.80	Between within	158.60 395.40	2 27	79.30 14.64	5.42*	3.35
Adjusted post test mean	30.08	31.93	24.99	Between within	239.66 236.21	2 26	119.83 9.09	13.19*	3.37

*Significant at 0.05 level of confidence

The table I shows that the pre test mean values on arm power of aerobic training group, core strength training and control group are 25.50, 23.90, 27.00 respectively. The obtained “F” ratio 1.14 for pre-test mean was lesser than the table value 3.35 for df 2 and 27 required for significant at 0.05 level of confidence on arm power. The post-test mean value of aerobic training group, core strength training group and control group 30.10, 31.10, 25.80 respectively. The obtained “F” ratio 5.42 for post-test mean was greater than the table value 3.35 for df 2 and 27 required for Significant at 0.05 level of confidence on

arm power. The Adjusted post test mean of aerobic training group, core strength training and control group are 30.08, 31.93and 24.99 respectively. The obtained “F” ratio 13.19 for post-test mean was greater than the table value 3.37 for df 2 and 26 required for significant at 0.05 level of confidence on arm power. Since the obtained “F” ratio value was significant further to find out the parried mean difference, the scheffe,s post hoc test was employed and presented in the below table. The scheffe’s post hoc test for the Difference between Paired Means on Arm power

Table 1(a): The Scheffe’s post hoc test for the Difference between Paired Means on Arm power

Aerobic training group	Core strength training group	Control group	MD	CI
30.08	-	24.99	5.09*	3.49
	31.92	24.99	6.93*	3.49
30.08	31.92		1.84	3.49

*Significant at 0.05 level of confidence

The table shows that the adjusted post test mean in arm power between aerobic training and control group is 5.09 it significant at 0.05 level of confidence and proved that there was a significant improvement. Core muscle strength training

group and control group is 6.93 it is significant at 0.05 level of confidence and proved that there was a significant improvement. Hence there was a significant difference between control group and experimental group in arm power

among cricket players. However the mean difference between the two experimental groups was 1.84 which was not significant at 0.05 level of confidence. Further it is concluded based on the result that there was no significant difference between adjusted post means of aerobic training group and

core muscle strength training group on arm power. Analysis of covariance for the pre, post and adjusted post test mean values for aerobic training group, core strength training group on Muscular endurance (in counts).

Table 2: Analysis of covariance for the pre, post and adjusted post test mean values for aerobic training group, core strength training group on Muscular endurance (in counts).

Test	Aerobic training group	Core strength training group	Control group	Sources of variance	Sum of squares	df	Mean square	“F” ratio	Table value
Pre test mean	23.60	22.70	24.20	Between within	11.40 194.10	2 27	5.70 7.19	0.79	3.35
Post test mean	25.80	26.30	22.80	Between within	71.67 95.30	2 27	35.83 3.53	10.15*	3.35
Adjusted post test mean	25.79	26.39	22.72	Between within	73.99 92.92	2 26	36.99 3.57	10.35*	3.37

*Significant at 0.05 level of confidence

The table II shows that the pre test mean values on muscular endurance of aerobic training group, core strength training and control group are 23.60, 22.70, 24.20 respectively. The obtained “F” ratio 0.79 for pre-test mean was lesser than the table value 3.35 for df 2 and 27 required for significant at 0.05 level of confidence on muscular endurance. The post-test mean value of aerobic training group, core strength training group and control group, 25.80, 26.30 and 22.80 respectively. The obtained “F” ratio 10.15 for post-test mean was greater than the table value 3.35 for df 2 and 27 required for significant at 0.05 level of confidence on arm power. The

Adjusted post test mean of aerobic training group, core strength training and control group are 25.79, 26.39 and 22.72 respectively. The obtained “F” ratio 10.35 for post-test mean was greater than the table value 3.37 for df 2 and 26 required for significant at 0.05 level of confidence on muscular endurance. Since the obtained “F” ratio value was significant further to find out the paired mean difference, the scheffe’s post hoc test was employed and presented in the below table II (a).

The scheffe’s post hoc test for the Difference between Paired Means on Arm power.

Table 2 (a): The table show Scheffe’s Post hoc test for the difference between paired mean on Muscular endurance.

Aerobic training group	Core strength training group	Control group	MD	CI
25.78	-	22.72	3.06*	2.18
	26.38	22.72	3.66*	2.18
25.78	26.38		0.06	2.18

*Significant at 0.05 level of confidence

The table shows that the adjusted post test mean in muscular endurance between aerobic training and control group is 3.06 it significant at 0.05 level of confidence and proved that there was a significant improvement. Core muscle strength training group and control group is 3.66 it is significant at 0.05 level of confidence and proved that there was a significant improvement. Hence there was a significant difference between control group and experimental group in arm power among cricket players. However the mean difference between the two experimental groups was 0.06 which was not significant at 0.05 level of confidence. Further it is concluded based on the result that there was no significant difference between adjusted post means of aerobic training group and core muscle strength training group on muscular endurance.

4. Conclusion

Based on the research finding the following conclusions was drawn.

The aerobic training and core strength training group has achieved significant positive improvement on physical fitness variables of cricket players when compared to the control group.

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